

The M7100<sup>IP</sup> mobile is a digital two-way radio that provides

- Multi-Mode Operation
- Over-the-Air Programming
- Advanced Digital Voice



The M7100<sup>IP</sup>, based on the tradition of the popular Orion™ mobile, was designed to meet the critical communications demands of public safety users. It is a high-specification, feature-rich mobile built to deliver superior performance. The M7100<sup>IP</sup> sets new standards for flexibility, performance, and reliability.

**One Radio – Multiple Applications**

The M7100<sup>IP</sup> uses a high-speed digital signal processor and the latest RF components to support multiple applications in one package:

- Project 25 Digital Conventional
- P25 Trunking
- ProVoice™ Digital Trunking
- EDACS® Trunking (Aegis™ is optional)
- DES Encryption
- Advanced Encryption Standard (AES) for P25 Trunking, P25 Conventional, and ProVoice™ Trunking
- Complete Analog Conventional features

**Project 25 Interoperability**

The M7100<sup>IP</sup> is Project 25 compliant and is ideal for use either as a P25 digital conventional or trunked mobile. The mobile provides digital interoperability with other Project 25 users during critical communications situations.

**Flexible Operation**

The M7100<sup>IP</sup> offers many of the flexible operating features that were proven with the Orion, and adds some new features as well.

- Dual transceivers offer operation in multiple frequency bands with a single controller.
- Dual control units can be programmed to control a single transceiver.

- The Hand Held Controller provides a more covert level of operation and is especially effective in space-constrained areas.
- Versatile mounting configurations allow users a choice between front or remote mount.

**Feature Rich, Software-Based Mobile**

Based on Digital Signal Processor (DSP) architecture, the feature set of the M7100<sup>IP</sup> is extensive and easily expandable through software upgrades to meet the specific requirements of users.

- The standard M7100<sup>IP</sup> incorporates the critical communications features Emergency and Dynamic Regroup to deliver advanced performance.
- Trunked systems/groups may be configured for up to 1,024 different combinations and up to 1,024 conventional channels.
- The Extended Network feature package upgrades system/group combinations to maximum capacity and includes ProScan™ and ProFile™. Individual software options may also be added to meet user requirements.
- ProFile offers easy over-the-air programming for efficient updates of radios.
- ProScan provides the user smooth, automatic roaming between sites.
- The M7100<sup>IP</sup> includes the full conventional feature set, including dual priority scan and various tone signaling formats.

**Advanced Digital Voice**

The M7100<sup>IP</sup> is available with Harris' third-generation digital voice technology,

ProVoice. ProVoice utilizes the acclaimed Improved MultiBand Excitation (IMBE™) vocoder. State-of-the-art digital signal processing techniques used in ProVoice also allow the M7100<sup>IP</sup> to deliver exceptional voice quality in areas where the signal strength from the repeater is weak.

**EDACS Security Key**

The M7100<sup>IP</sup> supports the EDACS Security Key (ESK), which is an EDACS/ProVoice feature. ESK prevents unauthorized users from programming radios for use on and from accessing an EDACS or ProVoice system.

**Radio TextLink Text Messages**

With this option, users may receive, display, and respond to text messages sent from authorized users on the ProVoice, EDACS, or P25<sup>IP</sup> network. This feature improves real-time situation intelligence and communications among first responders while also providing the capability to leave messages with users who are actively engaged in other critical activities.

**Optional GPS Capability**

The optional Global Positioning System (GPS) receiver module can provide standard GPS formatted data over the air for vehicle tracking systems.

**Backwards Compatibility**

The M7100<sup>IP</sup> mobile protects the user's investment by assuring backward compatibility and forward migration. Users may continue to rely on the proven technology of the Orion-compatible products such as the control units and vehicular repeaters and may add new features to the radio as their requirements change.

### General Specifications

#### Dimensions (H x W x D):

Radio (Includes Plastic Front Cover and Gasket, 110W unit):  
2.4 x 6.9 x 11.3 in.  
(61 x 176 x 286 mm)

Radio and Control Unit (Includes Knobs):  
2.4 x 6.9 x 13.1 in.  
(61 x 176 x 332 mm)

Radio (Includes Plastic Front Cover and Gasket, 50W unit):  
2.0 x 6.9 x 9.3 in.  
(51 x 176 x 236 mm)

Radio and Control Unit (Includes Knobs):  
2.4 x 6.9 x 11.1 in.  
(61 x 176 x 282 mm)

#### System Voltage:

10.8 to 16.6\* VDC Negative Ground  
\*Not to exceed 14.3V above +50°C for motorcycle applications.

#### Ambient Temperature Range:

-22 to +140°F  
(-30 to +60°C)

#### Relative Humidity:

90% @ 122°F (50°C)

#### Altitude:

15,000 ft (4572 m)

#### Duty Cycle:

TIA/EIA-603

#### Programming:

Field PC Programmable

#### Microphone:

Weatherproof microphone with hookswitch

#### Mounting:

Front or Remote Mount available

#### Construction:

Control Unit: High Impact Plastic  
Transceiver: Cast Metal

#### Speaker:

External, 15W

#### Operation:

12 VDC Negative Ground

#### Signaling:

EDACS Digital Control  
Conventional  
Type 99  
P25 Conventional  
Channel Guard (CTCSS)  
Digital Channel Guard  
G-STAR™ Emergency/ID Encode  
Two-Tone Individual Call Decode

### Options and Accessories

Remote mount kit, system and scan control units, Hand Held Controller, mobile mic, DTMF mic, noise canceling mic, desk mic, desktop control station, and motorcycle kit.

### Encryption Standards

FIPS 140-2 Level 1

### Transmitter

	VHF
Frequency Range (MHz):	136-174
Rated Power Output (W):	50-110, 8-50
RF Output Impedance (ohm):	50
Frequency Stability (ppm):	±2.0
Modulation/Deviation (kHz):	±5
FM Hum and Noise (Wideband/Narrowband) (dB):	52/46
Audio Response:	+1/-3.0 dB from 6 dB/octave pre-emphasis; 300-2500 Hz
Audio Distortion (typical):	<2.5% @ 1 kHz, <5.0% @ 2.5 kHz
Spurious and Harmonics Emissions (dBm):	<-20
Adjacent Channel Power (dBc):	
C4FM (6 kHz bw):	>67
Wideband:	>70

### Receiver

	VHF
Frequency Range (MHz):	136-174
RF Input Impedance (ohm):	50
Channel Spacing (kHz):	12.5, 25
Frequency Stability (ppm):	±2.0
Reference Sensitivity (12 dB SINAD) (µV/dBm):	0.3/-117.5 (no pre-amp), 0.2/-121.0 (with pre-amp)
P25 Reference Sensitivity (dBm):	<-116
Adjacent Channel Selectivity (dB):	
@ Narrowband (15 kHz):	>70 (no pre-amp), >65 (with pre-amp)
@ Wideband (30 kHz):	>86.5 (no pre-amp), >81.5 (with pre-amp)
Intermodulation Rejection (dB):	>80 (no pre-amp), >75 (with pre-amp)
Spurious Rejection (dB):	>90
Audio Response:	+1/-3 dB of 6 dB/octave de-emphasis, 300-3000 Hz
Audio Output (W):	15W at speaker in front-mount applications 12W at speaker in remote-mount applications
Adjacent Channel Interference Power Ratio (dB):	
C4FM:	>60

Note: Numbers are per TIA-EIA-603 Methods.

### Environmental Specifications

Standard	Parameter	Methods & Procedures
MIL-STD-810F	Low Pressure	500.4, Proc. I, II
	High Temperature	501.4, Proc. I, II
	Low Temperature	502.4, Proc. I, II
	Temperature Shock	503.4, Proc. I
	Solar Radiation	505.4, Proc. II
	Blowing Rain	506.4, Proc. I
	Humidity	507.4
	Salt Fog	509.4, Proc. I
	Blowing Dust	510.4, Proc. I
	Min Integrity Vibration	514.5, Proc. I, Category 24
	Functional/Basic Shock	516.5, Proc. I
	Transit Drop	516.5, Proc. IV
TIA/EIA-603	Vibration Stability	Par. 2.3.4 & 4.3.4
	Shock Stability	Par. 2.3.5 & 3.3.5
U.S. Forest Service	Vibration Stability	Par. 7.15

### Digital Operation

Vocoding Method:	Improved MultiBand Excitation (IMBE™)
Data Rate:	9600 bps
Delivered Audio Quality:	CM3 @ 5% bit error rate
Modulation:	GFSK for ProVoice, C4FM for P25

### Encryption

Encryption Technique:	Non-Linear Product/Block Transformation
Algorithm Types:	Data Encryption Standard (DES) OFB Advanced Encryption Standard (AES) (P25 Trunking, P25 Conventional, and ProVoice Trunking)

### Regulatory Data

Frequency Range (MHz)	RF Output (W)	FCC Type Acceptance Number	Applicable FCC Rules	Industry Canada Certification Number*	Applicable Industry Canada Rules	NTIA Certification Number
136-174	50-110	OWDTR-0019-E	Part 22, 80, 90	3636B-0035	RSS-119	JF-1208073
136-174	8-50	OWDTR-0035-E	Part 80, 90	3636B-0035	RSS-119	JF-1208073

\*Industry Canada certification is for 138-144 MHz, 148-149.9 MHz, and 150.05-174 MHz